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ABSTRACT

Researchers have been working toward isolating a set of psychological risk factors that would reliably predict coronary problems. This coronary-prone behavior pattern, Type A, is characterized by extremes of competitiveness, striving for achievement, impatience, and hostility. Differences were examined between 20 Type A and 20 Type B (non-coronary-prone) females in terms of spontaneous occipital alpha activity. Four measures from a physiograph were obtained: the total amount of time the female produced alpha exceeding 20 microvolts in amplitude, and 30 microvolts; the total numbers of entries into alpha exceeding 20 microvolts, and 30 microvolts. Results revealed that Type B females produced occipital alpha for significantly longer cumulative times during a 10-minute session than the Type A females. Type A and B females did not differ on overall self esteem, as measured by the Tennessee Self Concept Scale, nor on eight of its 11 subscales. (Author/BMW)

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Female Coronary-Prone Behaviors: Relationship to Alpha and Self-Concept

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In recent years a great deal of research has been designed to identify specific factors which enhance the risk of coronary heart disease. Glass (1977), among others, pointed out that the majority of earlier research on the etiology of coronary heart disease concentrated upon such factors as age, hypertension, excessive levels of cholesterol, tobacco usage, genetic influences, obesity, lack of exercise, and incidence of diabetes mellitus. Friedman and Rosenman (1974), and Jenkins (1976), after extensive reviews of research on these traditional factors, suggested that while the likelihood of coronary heart disease is greater when more of these risk factors are present, there are still a great many cases in which combinations of the factors do not successfully predict the occurrence of coronary heart disease. As Friedman and Rosenman have noted, many cardiac patients exhibit few of these factors and thus their value as reliable predictors is equivocal.

A number of researchers in the past decade or so have been working toward isolating a set of psychological risk factors that would enable reliable prediction of coronary problems. Friedman and Rosenman (1959, 1974) were the first to identify a composite behavioral pattern which increases the chances of occurrence of coronary heart disease. This behavior pattern is labeled the coronary-prone (Type A) behavior pattern. It is characterized by extremes of competitiveness, striving for achievement, a sense of time urgency, impatience, and hostility; as has been pointed out, this pattern is neither a stress condition or a distressed response, but is rather a style of overt behavior by which certain

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individuals confront their life situation. The Type B, or coronary-resistant behavior pattern, is described as the relative absence of Type A characteristics. The Type A behavior pattern has proven to be a significant predictor of coronary disease; in fact, Brand, Rosenman, and Sholtz (1976) have found, through multiple logistic analysis, that Type A men have a 31% risk increase compared to Type B men who have the same standard risk factors.

The classification of persons on the Type A-Type B dimension can be accomplished in several ways: a structured interview, in which not only content but behaviors of the interviewee are evaluated, and a paper-and-pencil test, the Jenkins Activity Survey for Health Prediction (Jenkins, Rosenman, & Zyzanski, 1972), are probably the two most widely used methods of assessment.

Until the last decade, coronary heart disease was primary a male problem; however, in recent years the incidence of coronary disease amony women has risen. This may be due to the changing sex roles within our society so that large numbers of women are now facing the stress of competitive drive in contemporary society. Regardless of the reasons for the increased incidence, very little prospective and longitudinal research has been undertaken to investigate in women the relationship between the Type A behavior pattern and the subsequent occurrence of coronary problems. The research that has been done indicates that there are no sex differences in the prevalence of the coronary-prone behavior pattern and, similarly to males, that the occurrence of coronary heart disease is far more frequent in Type A women than in Type B (coronary-resistant) women. Friedman and Rosenman noted that there is greater incidence of coronary disease among American women than European.

The present study is a part of a larger project in progress by a cross-disciplinary research team at Georgia Southern College. One of the questions that this group has been interested in is whether there are differences between

Type A and Type B persons in terms of spontaneous occipital alpha activity. Spontaneous, in this case, being defined as alpha activity produced in the absence of feedback or specific alpha training. The thinking behind this is rather straight-forward. Even though the issue of association between alpha and empirically defined states of relaxation is as yet unresolved, a number of researchers have found that occipital alpha is reliably associated with certain subjective states such as calmness, serenity, pleasant relaxation, and "letting go." These seem to be states that are not characteristic of the Type A individual; thus, the question of differences in spontaneous alpha production of Type A and B persons. In an earlier phase of the Georgia Southern project, it was found that Type A males produced significantly less spontaneous alpha activity than their Type B counterparts (Coleman, Thomas, Olewine, Farmer, Comer, & Hames, 1978).

Considering the evidence that Type A males produce less spontaneous alpha than Type Bs and other data suggesting that women display the same coronary-prone behaviors as men leads to an obvious question: are there differences between Type A and Type B females in terms of spontaneous alpha production? This was one of the questions explored in the present study.

Glass found significant correlations between scores on the Jenkins Activity Survey and the total and factor scores of the Texas Social Behavior Inventory (Helmreich, Strapp, & Ervin, 1973), such that Type A behavior appears to be associated with high self-esteem, feelings of self-confidence, feelings of social effectiveness, forcefulness and dominance, and feelings of security in social interrelationships. The present investigation utilized the Tennessee Self Concept Scale (Fitts, 1964) which yields scores on a number of dimensions of the self-concept to assess differences in Type A and B females.

Method

Subjects: The student version of the Jenkins Activity Survey for Health Prediction was administered to a large number of female college students. Those scoring in the upper and lower thirds were asked to participate in the study. There were 20 Type A volunteers, mean Jenkins score of 11; and 20 Type B volunteers, mean Jenkins score of 4.

A double-blind procedure was used, so that neither subjects nor experimenters were aware of JAS scores obtained; additionally, subjects were not told, prior to completion of the study, any details of the electroencelphalographic parameters of interest.

Procedure: A Narco Physiograph was used to record occipital alpha during 10 minutes in which the subject lay quietly in a darkened, isolated room. Through the use of a Limit Indicator and two sets of counters and timers, the following measures were obtained: (1) total amount of time the female produced alpha exceeding 20 microvolts in amplitude, (2) total amount of time the female produced alpha exceeding 30 microvolts, (3) total number of entries into alpha exceeding 20 microvolts, and (4) total number of entries into alpha exceeding 30 microvolts. Dividing the total time by number of entries provided information about specific patterns of alpha production at both amplitudes (for example, one person may produce rather sustained periods of alpha, while another may produce brief but frequent periods of alpha).

Results

One-tailed t-tests were used to assess differences between Types A and B.

It was found that Type B females spent more time in alpha above 20 uV ($t = 3.91$, $p < .01$) than did Type As. Additionally, Type Bs had a significantly

greater number of discrete occurrences of alpha at both levels (t = 1.71, $p < .05$; t = 2.37, $p < .05$). Patterns of activity (obtained by dividing total time in alpha by number of entries into alpha) were significantly different at the 20uV level, indicating that Type Bs had a higher mean time per occurrences of alpha (t = 1.91, $p < .05$); no significant difference was found at the 30 uV level (t = 1.63).

Significant differences between Types A and B were found only on two of the Tennessee Self Concept scales (see Table 1). They differed on the Distribution scores, a measurement of the degree of certainty about one's own self-concept (t = 2.98, $p < .01$), with Type As expressing more certainty than Type Bs. Additionally, the groups scored significantly different on the Self-Criticism Score which assesses one's capacity for self-criticism or lack of defensiveness (t = 2.69, $p < .01$), with Type A females being significantly less self-critical.

TABLE 1

Measures Obtained From

Tennessee Self Concept Scale

Type	Means	Standard Deviation	Computed t
	Overall Self Esteem		
A	353.30	21.20	0.00
B	353.30	30.14	
	Identify		
A	130.65	7.16	0.90
B	128.20	9.77	
	Self Satisfaction		
A	108.30	10.70	0.72
B	111.25	14.82	
	Behavior		
A	114.35	11.03	0.15
B	113.85	9.83	
	Physical Self		
A	70.30	4.52	0.30
B	69.70	7.58	
	Moral-Ethical Self		
A	71.65	6.92	0.18
B	72.30	8.42	
	Personal Self		
A	68.00	4.88	0.00
B	68.00	6.95	
	Family		
A	73.50	6.36	0.09
B	73.70	7.45	
	Social Self		
A	70.65	6.17	0.11
B	70.40	7.59	
	Certainty About Self Perception		
A	117.10	23.87	2.98*
B	98.70	13.86	
	Self Criticism		
A	33.35	4.62	2.69*
B	38.25	6.67	

* $p < .01$

Discussion

It was found that females exhibiting the Type B, coronary-resistant, behavior pattern produced occipital alpha for significantly longer cumulative times during a 10-minute session, at both the 20 uV and 30 uV levels than did Type A females. Type Bs also had significantly more separate occurrences of alpha at both levels, and these occurrences were of significantly longer duration at the 20 uV level. Since the Type A behavior pattern is characterized by impatience, time-urgency, a desire to achieve, it is not surprising Type A females produced less of the brain activity associated with a relaxed, tranquil state. Indeed, having to lie quietly for 10 minutes in a darkened room without being told exactly what was being measured or why may well be aversive to the Type A person who strives to do more and more things in less and less time. Relaxation techniques and biofeedback training have been successfully used in treatment of cardiac patients (e.g., Shapiro, Schwartz, & Benson, 1974; Suinn, 1974, 1975). The possibility that alpha biofeedback training of Type A individuals may be an effective preventive health measure should be explored. Clearly, if occipital alpha production is associated with relaxed tranquility, then teaching Type A individuals how to increase alpha may be useful in the management of stress.

Type A and B females did not differ on overall self-esteem, as measured by the Tennessee Self Concept Scale, nor on eight of its subscales. That there were not more differences was surprising since Glass' correlational study using the Texas Social Behavior Inventory suggested that Type A persons see themselves more positively on a variety of self-concept dimensions. Too, an earlier study at Georgia Southern with male subjects using the Tennessee Self Concept Scale (Coleman et al., 1978) found that Type As had a higher overall level of self-esteem, more positive perceptions of the way they behave or act (Behavior Sub-scale), more

positive views of their health, physical appearance and sexuality (Personal Self Subscale), a greater sense of personal worth and adequacy (Personal Self Subscale), and greater certainty with which they view themselves (Distribution Subscale). The only significant differences in the present study were: Type As were more certain about their self-perceptions (Distribution Subscale) and less self-critical (Self Criticism Subscale). The finding of greater certainty about self is in agreement with those of Glass (1977), and Rosenman and colleagues (1974), both of whom reported correlations between Type A behavioral scores and the Self-Confidence scores on the Adjective Check List. Too, it is consonant with the Glass finding of positive correlations between Pattern A and the Confidence Subscale of the Texas Social Behavior Inventory. Type B females scored significantly lower on the Self Criticism Subscale. This may indicate a greater defensiveness on the part of Type As; if so, this fits well with an observation made by Friedman and Rosenman that "Type A subjects do not admit--even to themselves--the existence of any defect or emotional stigma." Our findings with the Tennessee Self Concept Scale indicate that self concept scores are, by and large, not useful measures of the Type A behavior pattern in females.

References

Brand, R. J., Rosenman, R. H., & Sholtz, R. I. Multivariate prediction of coronary heart disease in the Western Collaborative Group Study Compared to the findings of the Framingham study. Circulation, 1976, 53, 348-355.

Coleman, T. M., Thomas, G., Olewine, D. A., Farmer, P. K., Comer, D. W., & Hames, C. G. Coronary-prone behavior patterns: Relationship to alpha and self-concept. Paper presented at the American Psychological Association, Toronto, August 1974.

Fitts, W. H. The Tennessee Self Concept Scale. Nashville, Tenn.: Counselor Recordings and Tests, 1964.

Friedman, M., & Rosenman, R. H. Association of specific overt behavior pattern with blood and cardiovascular findings. Journal of American Medical Association, 1959, 169, 1286-1296.

Friedman, M., & Rosenman, R. H. Type A behavior and your heart. New York: Knopf, 1974.

Glass, D. C. Behavior patterns, stress, and coronary disease. New York: John Wiley & Sons, 1977.

Helmrich, R., Strapp, J., & Ervin, C. The Texas Social Behavior Inventory (TSBI): An objective measure of self-esteem or social competence. Unpublished manuscript, The University of Texas at Austin, 1973.

Jenkins, C. D. Recent evidence supporting psychologic and social risk factors in coronary disease. New England Journal of Medicine, 1976, 294, 987-994, 1033-1038.

Jenkins, C. D., Rosenman, R. H., & Zyzanski, S. J. The Jenkins Activity Survey for Health Prediction. Boston: Published by the authors, 1972.

Rosenman, R. H., Rahe, R. H., Borhani, N. O., & Feinlieb, M. Heritability of personality and behavior pattern. Proceedings of the First International Congress on Twins. Rome, Italy, November 1974.

Shapiro, D., Schwartz, G. E., & Benson, H. Biofeedback: A behavioral approach to cardiovascular self control. In R. S. Elliot (Ed.) Stress and the heart. Mt. Kisco, N. Y.,: Futura, 1974.

Suinn, R. M. Training to relax lowers serum cholesterol levels. Medical News of the Journal of the American Medical Association, 1974, 230, 19.

Suinn, R. M. The cardiac stress management program for Type A patients. Cardiac Rehabilitation, 1975, 36, 269-270.